

NOVITATES ZOOLOGICAE

Vol. XXXVIII.

JUNE 1933.

No. 2.

ON A COLLECTION OF LEPIDOPTERA FROM SPANISH MOROCCO.

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I HAVE lately received a small collection from Dr. E. Romei made during June and July 1932 in Spanish Morocco, and as no list of the Lepidoptera of this region appears to have been published, I think it will be of interest to give the list of the specimens received. By far the largest number were collected at Xauen, south-east of Tetuan, and Ketama, considerably farther south-east of Xauen. The other localities where a few of the specimens were captured are Tetuan, 200 m. = 656 ft.; Cuernos de Xauen, 1,300 m. = 4,264 ft.; Taghsut (south of Ketama), 1,800 m. = 5,904 ft.; Assila, 1,800 m. = 5,904 ft.; Tidiguin, 2,200 m. = 7,216 ft.; Hauta Kasdir, 1,750 m. = 5,740 ft. The altitude of Xauen is 600 m. = 1,968 ft., and of Ketama 1,500 m. = 4,920 ft.

1. *Papilio machaon maxima* Verity.

Papilio machaon maxima Verity, *Rhop. Palaearct.* p. 296, pl. lii, f. 2 (1911) (gen. vern.) (Tangier).
Papilio machaon maxima gen. aest. *angulata* Verity, *l.c.* p. 296, pl. lx, f. 14 (1911) (Tangier).

The specimen sent to Tring is slightly smaller than the ♂ taken by Hartert and Young near Azrou in the Middle Atlas, and the yellow is deeper and duller, but it appears certainly to be a typical example of *P. m. maxima* gen. aest. *angulata*.

1 ♂ Ketama, 27 July.

2. *Papilio podalirius lotteri* Aust.

Papilio podalirius ab. *lotteri* Austaut, *Petit. Nour. Entom.* ii, p. 233 (1879) (Sidi-Bel-Abbès).
Papilio feisthameli forma *maura* Verity (gen. vern. ex Africa), *Rhop. Palaearct.* p. 293, pl. i, ff. 7, 8 (1911) (Lambessa).

1 ♂ and 2 ♀♀ came to Tring. One ♀ (No. 3) has a slight wash of yellow on the white portions of the wings, but very much less than in the gen. vern. *maura* ex Morocco in the Tring Museum; the ♂ and ♀ (No. 4) are typical *lotteri*, showing the narrow fulvous band above anal ocellus as opposed to the broader one in *feisthameli* and its spring brood *miegi* from north of the western Mediterranean, as does also the ♀ No. 3.

1 ♂, 2 ♀♀ Ketama, 14, 27, 31 July.

3. *Aporia crataegi mauritanica* Oberth.

Aporia crataegi mauritanica Oberthür, *Étud. Lépid. Comp.* iii, p. 120 (1909) (Algeria).

Dr. Romei sent me only 1 ♀, which agrees perfectly with the series at Tring from Algeria and the Middle Atlas of Morocco.

1 ♀ Ketama, 1 July.

4. *Ganoris rapae mauritanica* (Verity).

Pieris rapae mauritanica Verity, *Rhop. Palaearet.* p. 155, pl. xxxiii, ff. 43, 44; pl. xxxiv, ff. 15, 16 (1908) (Algeria text; Algeria, Morocco, Tunisia, figs.) (figs. 15, 16, pl. xxxiv as *leucotera* Stef.).

The specimens received are all very uniform and typical summer brood = *rapae mauritanica*, but 1 ♀ from Ketama (No. 11) has the dark apices of the forewing more strongly powdered with white.

3 ♂♂, 4 ♀♀ Ketama, 29 June; 1, 27 July.

1 ♂ Tetuan, 26 June.

5. *Leucochloe daplidice daplidice* (Linn.).

Papilio daplidice Linnaeus, *Syst. Nat.* ed. x, p. 468, no. 62 (1758) (Southern Europe and Africa).

Dr. Romei sent 4 ♂♂, 4 ♀♀ to Tring. If these had been spring brood examples, I should have considered them rather aberrant examples of *d. albidice* Oberth., but being summer examples I cannot separate them from typical *daplidice*, though one or two exhibit a slight yellowish tinge to the green markings below.

4 ♂♂, 4 ♀♀ Ketama, 29 June; 9, 12 July.

6. *Colias electo croceus* (Geoff.).

Papilio croceus Geoffroy, in Fourcroy, *Entom. Par.* ii, p. 250 (1785) (Paris).

The Tring Museum received 4 ♂♂, 8 ♀♀, 4 of which belong to the dimorphic white ♀ form *helice*. One *helice* (No. 30) is very small and has extra wide black outer margins with very small submarginal pale spots; 2 other *helice* (Nos. 31, 32) have the white tinged with cream buff; and also 1 orange ♀ (No. 29) has also very broad black outer margins and reduced pale submarginal spots.

4 ♂♂, 7 ♀♀ (3 ♀♀ *helice*) Ketama, 29 June; 4 July; 1 ♀ (*helice*) Tetuan, 26 June.

7. *Gonepteryx cleopatra* (Linn.).

Papilio cleopatra Linnaeus, *Syst. Nat.* ed. xii, p. 765, no. 105 (1767) (ex Barbaria).

One of the ♀♀ has so little orange flush on the hindwings that it might be mistaken for a ♀ *rhamnii meridionalis*, if it were not for the checkered fringe of its forewing.

3 ♂♂, 3 ♀♀ Ketama, 4, 9, 12 July; 1 ♂ Taghsut, 3 August; 1 ♀ Cuernos de Xauen, 21 July.

8. *Gonepteryx rhamnii meridionalis* Röber.

Gonepteryx rhamnii meridionalis Röber, in Seitz, *Grossschmett. Erde*, i, p. 61 (1907) (Algeria and S. Asia Minor).

The Tring Museum has received 4 ♂♂, 4 ♀♀ of this southern race of *G. rhamnii* from Dr. Romei. Röber has united the North African *rhamnii* with those of South Asia Minor; unfortunately the Tring Museum only possesses 1 ♂, 1 ♀ from

Asia Minor, so I feel unable to give an opinion; but this pair has larger orange stigmata on the forewings than either Algerian or Moroccan examples, so that I think it would be wise to restrict the name *meridionalis* to the N.W. African examples and await further material from Asia Minor. This insect is by no means common in Algeria, and in the Middle and Great Atlas of Morocco is excessively scarce, Dr. Hartert having only caught 2 ♂♂ on his four excursions.

4 ♂♂, 4 ♀♀ Ketama, 29 June; 4, 6, 18, 29 July.

9. *Pyrameis cardui* (Linn.).

Papilio cardui Linnaeus, *Syst. Nat.* ed. x, p. 475, no. 107 (1758) (Europe and Africa).

One of the specimens received is normal in size and very bright coloured, the second a dwarf and paler in coloration.

1 ♂ Ketama, 18 July; 1 ♂ Tetuan, 26 June.

10. *Vanessa polychloros erythromelas* Aust.

Vanessa polychloros var. *erythromelas* Austaut, *Le Naturaliste*, vii, p. 142 (1885) (Seb Dou).

1 ♂, 1 ♀ of rather small size are in the collection. This pair are of an exceptionally bright reddish chestnut ground colour, but it requires a much larger series before it would be safe to separate the form from Spanish Morocco.

1 ♂, 1 ♀ Ketama, 4, 31 July.

11. *Argynnis maja seitzii* Fruhst.

Argynnis maja seitzii Fruhstorfer, *Intern. Entom. Zeitschr.* Guben, ii, p. 69 (1908) (Alger).

Although the carmine underside of forewings is extremely bright and the green wash above is very strong in the specimens received, I do not think the Spanish Moroccan examples can be separated from the Algerian typical *m. seitzii*.

2 ♂♂, 3 ♀♀ Ketama, 27 July; 1 ♂, 1 ♀ Assila, 16 July; 1 ♂, Tidiguin, 29 July.

12. *Argynnis elisa auresiana* Fruhst.

Argynnis alippe auresiana Fruhstorfer, *Intern. Entom. Zeitschr.* Guben, ii, p. 69 (1908) (Aurès Mts.).

In Nov. Zool. xxxvi (1931), p. 194, I treated this insect as a separate species, as I had already done in vol. xxiv of the same journal (1917). This arose from my having overlooked Herr Reuss's article in the *D. Entom. Zeitschr.* 1922. I now hasten to correct this error and place this insect under its correct name as the mainland form of *elisa* Godart. It is nearer to the Corsican *elisa stechei* Vogt, but differs from both island forms of *elisa* by its very large size and rich green underside of the underwing. Dr. Romei sent 5 ♂♂, 1 ♀ of this insect, which, though very red, agree very well with the deeper coloured Algerian examples. 1 ♂ (No. 185) is very large.

3 ♂♂ Ketama, 18, 27 July; 1 ♂, 1 ♀ Taghsut, 3 July, 3 Aug.; 1 ♂ Tidiguin, 29 July.

13. *Argynnis aglaia excelsior* subsp. nov.

Differs from *A. a. lyauteyi* Oberth. in its larger size (♂♂), and the intense fox-red of the upperside, NOT rufous cinnamon buff as in *lyauteyi*. Below the salmon rufous of the forewing is much more intense and the buffy yellow trans-

verse postmedian band on the hindwings is broader, and in ♂ ♀ the green is more washed with olive. In the ♀ the buffy yellow patch above vein 5 of hindwing below of *lyanteyi* is almost absent in *excelsior*. Tegulae brownish rose, NOT olive brown.

♂ (Type) forewing 37 mm., expanse 81 mm.

6 ♂♂ Ketama, 4, 18, 27, 31 July; 1 ♀ Taghsut, 3 July.

14. *Argynnis lathonia lathonia* (Linn.).

Papilio lathonia Linnaeus, *Syst. Nat.*, ed. x, p. 481, no. 141 (1758) (Europe).

All 8 examples are very large and highly coloured, but cannot be separated from the typical race.

4 ♂♂, 4 ♀♀ Ketama, 29 June; 1, 4, 18, 27 July.

15. *Melitaea phoebe occitanica* Stdgr.

Melitaea phoebe v. *occitanica* Staudinger, *Cat. Lep.* ed. ii (1871) ("It." ex errore pro Ib.).

The four specimens are rather small and dusky, being evidently the summer brood. Dr. Hartert's series from the Middle Atlas of Morocco are of a slightly mixed character, some being more like *phoebe punica* Oberth., others more like *ph. occitanica*, evidently an intermediate race, though in my articles on Dr. Hartert's collection I treated his whole series as *ph. punica*.

1 ♂, 2 ♀♀ Ketama, 12, 18, 27 July; 1 ♂ Assila, 16 July.

16. *Melitaea didyma mauretanica* Oberth.

Melitaea didyma forma *mauretanica* Oberthür, *Étud. Lépid. Comp.* iii, p. 243 (1909) (Algeria, Spain).

4 ♂♂, 1 ♀ are in the collection; they are fine large examples of typical *mauretanica*, the ♀ being especially typical. Oberthür includes Spanish *didyma* under his name *mauretanica*, but they are not identical with North African examples. I have shown (Nov. Zool. xxiv, pp. 99, 100) that these Spanish examples must bear the name of *d. occidentalis* Stdgr. All 5 are very brilliant in colour.

2 ♂♂, 1 ♀ Ketama, 29 June, 1 July; 2 ♂♂ Cuernos de Xauen, 21 July.

17. *Satyrus (Nytha) alcyone caroli* nom. nov.

Satyrus alcyone maroccana Oberthür, *Étud. Lépid. Camp.* xvii, Planches, Expl. des Pls. Pl. C, p. 48, Pl. C. Phot. (1920) (Forêt d'Azrou, Middle Atlas).

I have hitherto through error kept this race of *S. alcyone* under Mr. Charles Oberthür's name of *S. alcyone maroccana* (see Nov. Zool. xxxvi, p. 195, no. 14 (1931)); but it has to be given a new name, as that of *maroccana* was given to *S. atlantis* by Mr. Meade-Waldo in 1905.

The 3 ♂♂, 3 ♀♀ are very dark and dusky and agree with the description of Mr. Oberthür.

1 ♂, 1 ♀ Ketama, 29 June, 18 July; 1 ♂, 1 ♀ Assila, 16 July; 1 ♂, 1 ♀ Tidiguim, 29 July.

18. *Satyrus (Chazara) briseis major* Oberth.

Satyrus briseis var. *major* Oberthür, *Étud. Entom.* i, p. 27 (1876) (Boghari).

There are at Tring 3 ♂♂, 2 ♀♀ of this species; they are decidedly smaller than Dr. Hartert's Azrou examples, 1 ♀ (No. 79) being even small for typical *briseis*, but the other ♀ (No. 80) is as big as average *b. major* from Batna, so I think we can safely register these 5 examples under *b. major*.

1 ♂ Taghsut, 3 Aug.; 3 ♂♂, 1 ♀ Cuernos de Xauen, 21 July.

19. *Satyrus (Satyrus) sylvicola sylvicola* Aust.

Satyrus sylvicola Austaut, *Le Naturaliste*, ii, p. 284 (1880) (Sebdu).

1 ♂ Ketama, 3 July; 2 ♂♂ Taghsut, 3 Aug.

20. *Satyrus (Satyrus) fidia* subsp. ?

Until I treated of *fidia* Linn. in Nov. Zool. xxiv, p. 106 (1917), most authors had treated the *fidia* from S. Europe as being typical, whereas in *Syst. Nat.* ed. xii, p. 770, no. 138, Linnaeus gives *Barbaria* (= Algeria) as sole habitat.

There are 3 ♂♂ in the collection, of which 1 (No. 69) has the veins on the underside of hindwing white as in *fidia fidia* (= *f. albivenosa* Aust.), while the other two show no signs of these white veins. Until we can compare a large series from Spanish Morocco, it is impossible to separate these from typical *fidia*, but those found in the neighbourhood of Gibraltar show no signs of these white veins and otherwise agree with these 3 from Spanish Morocco.

3 ♂♂ Cuernos de Xauen, 21 July.

21. *Satyrus (Cereyonis) abdelkader romeii* subsp. nov.

♂. Differs from *a. abdelkader* in being larger and considerably darker. The ocelli on forewing larger and the white dots also larger, but not so dark as ♂ *a. lambesanus*.

Forewing 39 mm., expanse 83 mm.

Unfortunately only 1 ♂ was sent, but it is too distinct to be overlooked. *S. a. nevai* occurs in the Middle Atlas, and *S. a. lambesanus* in the Great Atlas of Morocco, thus reversing the state of distribution as found in Algeria.

1 ♂ Cuernos de Xauen, 21 July.

22. *Satyrus (Minois) actaea simillima* Rothsch.

Satyrus actaea simillima Rothschild, *Nov. Zool.* xxxvi, p. 195, no. 16 (1931) (El Hajeb, Middle Atlas).

When I described this race from the specimens taken by Dr. Hartert and Mr. Meade-Waldo I overlooked Lucas's *actaea maroccana* (*Bull. Soc. Entom. France*, 1920), but the descriptions of both ♂ ♀ are so different that I have no hesitation in upholding my *simillima*. I cannot separate these Spanish Moroccan examples from those from other parts of the Atlas, though the ♀♀ on the hindwings below are a little greyer, less blackish. They show no signs of the white central band of *a. nevadensis*.

3 ♂♂, 2 ♀♀ Taghsut, 3 Aug.

23. *Melanargia galathea meade-waldoi* Rothsch.

Melanargia galathea meade-waldoi Rothschild, *Nor. Zool.* xxiv, p. 110, no. 54a (1917) (Tamarouth, Morocco).

Dr. Romei's specimens agree very well with Central Atlas examples collected by Dr. Hartert and Mr. Meade-Waldo; but the black areas, if anything, are more extensive, thus approaching Turkish *g. procida* as opposed to Hungarian *g. procida*.

5 ♂♂, 3 ♀♀ Ketama, 29 June; 1, 4 July.

24. *Pararge maera adrasta* (Hübner).

Papilio maera adrasta Hübner, *Samml. Eur. Schmett.* i, ff. 836-839 (1805) (South Europe?).

Three names have been applied to two of the Moroccan races of *maera*. In 1917 (*Nor. Zool.* xxiv, p. 112, no. 57) I described the race obtained by Mr. Meade-Waldo in the Great Atlas as *maera mcade-waldoi*; this is a large race, as big as the usual *adrasta* from Europe; then in 1922 (*Étud. Lépid. Comp.* xix, p. 81) Charles Oberthür (ignoring my description, as there was no figure) renamed the Great Atlas form *maera alluaudi*; on p. 82 of the same work he applies the name of *Pararge maera* var. *nevadensis* Oberth. to the Middle Atlas race of *maera*.

The 2 ♂♂ sent by Dr. Romei do not agree with the ♂ from the Middle Atlas figured in the above work, pl. dxxxii, f. 4423, by Oberthür, but agree well with examples taken in Andalusia by Signor Zuerci which are the true *maera nevadensis* Oberth., but appear to me hardly if at all separable from *maera adrasta*.

The Middle Atlas race called *m. nevadensis* by Oberthür is distinguished from true *nevadensis* = *adrasta* by the ♂ being almost the same colour above as the ♀; but I refrain from naming it, as only 1 ♂ so far is known.

1 ♂ Ketama, 4 July; 1 ♂ Cuernos de Xauen, 21 July.

25. *Pararge megera megera* (Linn.).

Papilio megera Linnaeus, *Syst. Nat.* ed. xii, p. 771, no. 142 (1767) (Austria, Dania).

2 ♀♀ Ketama, 4, 27 July; 3 ♂♂ Cuernos de Xauen, 21 July.

26. *Pararge aegeria meone* (Stoll).

Papilio meone Stoll, in Cramer, *Pap. Exot.* iv, p. 51, t. cccxiv, ff. E. F. (1780) (Alger).

4 ♂♂, 3 ♀♀ were sent to Tring of this insect, and though some are less heavily marked than most Algerian examples, they are not *aegeria aegeria*.

4 ♂♂, 3 ♀♀ Ketama, 29 June; 12, 18, 27, 31 July.

27. *Epinephele lycaon mauretanicus* (Oberth.).

Satyris eudora var. *mauretanicus* Oberthür, *Étud. Éton.* vi, p. 58 (1881) (Sebden, Lambèze).

3 ♂♂, 5 ♀♀ Ketama, 29 June; 1, 4, 18, 31 July.

28. *Epinephele maroccana* Blach.

Epinephele lycaon var. *maroccana* Blachier, *Ann. Soc. Entom. France.* lxxvii, p. 216, pl. iv, f. 5 (1908) (Moroccan Atlas).

Because the late Monsieur Ch. Blachier described this species as a race of *lycaon* instead of as a distinct species Oberthür renamed it. This under the rules

is not admissible, and this insect must stand under the name *maroccana* as, Blachier's name has twelve years priority.

2 ♂♂ Cuernos de Xauen, 21 July.

29. *Epinephele jurcina hispulla* (Hübner).

Papilio hispulla Hübner, *Samm. Eur. Schmett.* i, Taf. 116, ff. 593-596 (1805) (Portugal).

There are in this collection 4 ♂♂, 4 ♀♀; the ♂♂ appear quite typical, but ♀ No. 115 has the orange in cell and on disc reduced, ♀ No. 116 is a dwarf.

4 ♂♂, 4 ♀♀ Ketama, 29 June; 1, 18 July.

30. *Epinephele ida ida* (Esp.).

Papilio ida Esper, *Europ. Schmett.* i, pt. 2, p. 184, no. 176, pl. xcii, f. 2 (cont. xlii) (1777) (Pyrénées).

4 ♂♂, 4 ♀♀ Cuernos de Xauen, 21 July.

31. *Epinephele tithonus distincta* subsp. nov.

Differs from *tithonus decolorata* Fruhst. in the brighter deeper yellow on the underside of the hindwings, with the ocelli and other portions of the pattern picked out in deeper browns. Above the orange fulvous is deeper. Similar specimens collected by Signor Querci in Portugal are in the Tring Museum.

3 ♂♂, 3 ♀♀ Ketama, 9, 12, 27 July; 6 Aug.

32. *Coenonympha fettigi inframaculata* Oberth.

Coenonympha fettigi inframaculata Oberthür, *Étud. Lépid. Comp.* xix, p. 87 (1922) (Fort Toumliline, Morocco).

Dr. Romei sent a very fine series of this rare insect. They all show the large patch of white on the hindwing below, and most of them have the white line running from it along the transverse band much broader than in *fettigi* or *f. hollii*. Above they vary much in the ♂♂, some having the forewing uniform fuscous, thence running through all stages to a broad rufous postmedian band.

12 ♂♂, 5 ♀♀ Ketama, 4, 9, 12, 14, 18, 21, 31 July; 6 Aug.

33. *Coenonympha pamphilus lyllus* (Esp.).

Papilio lyllus Esper, *Europ. Schmett.* i, pt. ii, Forts, pl. cxxii (cont. 77), ff. 1, 2 (1777) (?).

Three of the ♀♀ (Nos. 153, 154, 156) have very broad, almost black, borders to both pairs of wings, as also has 1 ♂ (No. 149); this is ab. *marginata* Stdgr.

3 ♂♂, 4 ♀♀ Ketama, 1, 4, 8, 9, 18 July, 6 Aug.; 1 ♂ Taghsut, 3 July.

34. *Thecla ilicis mauretana* Stdgr.

Thecla ilicis var. *mauretana* Staudinger, *Iris*, v, p. 279, no. 11 (1892) (Tunis).

There are in the collection 7 ♂♂, 4 ♀♀ of this butterfly. The 7 ♂♂ above are very dark, because they are very fresh; 3 ♀♀ show an approach to ab. *cerri* Hübner; and 1 ♀ (No. 209) is ab. *auronitens* Seitz; this latter also is conspicuous by the absence of all markings on the underside of both fore- and hindwings, except a single red dot at tornus of hindwing and a shadowy indication of the white line on the hindwings. Some of both Algerian and Moroccan examples show the traces of and even complete narrow white lines on forewings.

7 ♂♂, 4 ♀♀ Ketama, 26 June; 9, 12, 18, 27 July.

35. *Chrysophanus phloeas phloeas* (Linn.).

Papilio phloeas Linnaeus, *Faun. Succ.* ed. ii. p. 285 (1761) (Sweden).

Dr. Romei sent 6 ♂♂, 4 ♀♀. 1 ♂ (No. 215) and 1 ♀ (No. 218) show a few blue spots behind the submarginal fiery bands of the hindwings above.

4 ♂♂, 4 ♀♀ Ketama, 6 June, 1, 9, 27 July, 6 Aug.; 2 ♂♂ Tetuan, 26 June.

36. *Lampides boeticus* (Linn.).

Papilio boeticus Linnaeus, *Syst. Nat.* ed. xii, i, p. 789, no. 226 (1767) (Barbaria, = Algeria).

One of the ♀♀ is gigantic; the following are the measurements of the 4 examples:

♂ (No. 220)	Forewing	17 mm.,	expanse	38 mm.
♀ (No. 223)	"	16 mm.,	"	35 mm.
♀ (No. 222)	"	17 mm.,	"	38 mm.
♀ (No. 221)	"	20 mm.,	"	45 mm.

1 ♂, 3 ♀♀ Ketama, 1, 4, 9 July.

37. *Tarucus telecanus* (Lang).

Papilio telecanus Lang, *Verz. Schmett.* ed. ii. p. 47 (1789) (Augsburg).

One of the specimens (No. 227) is very large.

4 ♂♂, 4 ♀♀ Ketama, 1, 4, 9, 18, 31 July.

38. *Lycaena astrarche calida* Bell.

Lycaena agestis var. *calida* Bellicr de la Chavignerie, *Ann. Soc. Ent. France* (ser. iv), ii, p. 615, no. 2 (1862) (Corsica).

The name *calida* applies to the Mediterranean race as a whole and *ornata* Stgdg. is to be used only for the spring brood. One of Dr. Romei's ♀♀ (No. 235) is similar to the ♂♂.

3 ♂♂, 9 ♀♀ Ketama, 1, 3, 12, 18, 27 July; 6 Aug.

39. *Lycaena icarus celina* Aust.

Lycaena celina Austaut, *Pet. Nouv. Entom.* ii, p. 293, no. 212 (1879) (Sidi-Bel-Abbés).

The chief difference between *icarus celina* and *icarus icarus* is the marginal row of black dots on the hindwings. In Moroccan examples both from the Middle and Northern Atlas these dots are smaller and less strongly marked than in Algerian specimens, but they must be treated as *celina* all the same, as the spots are certainly quite apparent. The 3 ♀♀ sent are decidedly small, but 2 ♂♂ (Nos. 246 and 251) are veritable dwarfs; the ♂ (No. 241) measures forewing 12 mm., expanse 27 mm.

5 ♂♂, 2 ♀♀ Ketama, 9, 18, 27 July; 1 ♂, 1 ♀ Cuernos de Xauen, 21 July.

40. *Lycaena amanda abdelazis* Oberth.

Lycaena amanda abdelazis Oberthür, *Étud. Lépid. Comp.* xix, pt. 1, p. 108 (1922) (Sebbab Valley, Middle Atlas).

I cannot find any trace of a description by Blachier, so I enter this subspecies under Oberthür's reference, as Mr. Meade-Waldo only quotes it under *amanda*.

2 ♂♂, 1 ♀ Ketama, 1, 4, 9 July.

41. *Lycaena argiolus algerica* Oberth.

Lycaena argiolus var. *algerica* Oberthür, *Étud. Lépid. Comp.* x, p. 401 (1915) (Algeria).

The greater extent of black in the outer half of the wings on the upperside of the ♀ distinguishes this race.

4 ♂♂, 4 ♀♀ Ketama, 9, 12, 18 July.

42. *Adopaea thaumas thaumas* (Hufn.).

Papilio thaumas Hufnagel, *Berl. Mag.* ii, p. 62 (1766) (Berlin).

One of the ♀♀ (No. 271) is very large (forewing 17 mm., expanse 39 mm.).

4 ♂♂, 4 ♀♀ Ketama, 29 June; 4, 6, 9 July.

43. *Adopaea acteon acteon* (Rott.).

Papilio acteon Rottenburg, *Naturf.* vi, p. 30, no. 18 (1775) (Landsberg a.d. Warthe).

1 ♂, 2 ♀♀ Ketama, 29 June; 12, 18 July.

44. *Adopaea hamza* (Oberth.).

Hesperia hamza Oberthür, *Étud. Entom.* i, p. 28, pl. iii, ff. 2A, B (1876) (Oran).

1 ♀ Ketama, 29 June.

45. *Carcharodus marrubii marrubii* (Ramb.).

Pamphila marrubii Rambur, *Faune Entom. Andal.* ii, p. 323, no. 3 (on pl. 12, ff. 3, 4, as *Syrichthus baeticus*).

Only 3 specimens were sent.

2 ♂♂, 1 ♀ Ketama, 29 June, 18 July.

46. *Carcharodus lavatherae lavatherae* (Esp.).

Papilio lavatherae Esper, *Europ. Schmett.* i, pt. 2, p. 148, no. 149, pl. lxxxii (cont. xxxii), f. 4 (1777-1780) (France and Switzerland).

Dr. Romei sent only 2 examples, so he found it apparently rare. This is, I consider, typical *lavatherae*, as neither specimen shows any sign of the red found in *l. internirufus* Rothsch. from West Algeria.

2 ♂♂ Cuernos de Xauen, 21 July.

47. *Carcharodus stauderi romei* subsp. nov.

Differs from *stauderi stauderi* gen. aest. *fulvissima* Verity by the blackish, not rich brown, ground colour, the greyish markings similar to gen. aest. *stauderi*, and the deep red smear above vein 1 of forewing.

3 ♂♂ Ketama, 29 June, 9 July.

48. *Hesperia numida* (Oberth.).

Syrichthus alveus-numida Oberthür, *Étud. Lépid. Comp.* 4, p. 404, pl. lv, ff. 484-486 (1910) (Lambèze).

1 ♂ Assila, 16 July.

49. *Hesperia onopordi* Ramb.

Hesperia onopordi Rambur, *Faune Andal.* p. 319, no. 4, pl. viii, f. 13 (1842) (Granada).

6 ♂♂, 3 ♀♀ Ketama, 9, 12, 31 July, 6 Aug.; 1 ♂ Assila, 16 July.

50. *Hesperia ali* (Oberth.).

Syrichthus ali Oberthür, *Étud. Entom.* vi, pt. iii, p. 61, pl. ii, f. 3 (1881) (Provinces Oran and Constantine).

The 5 specimens in the collection show slight variation towards Spanish examples of *sao* (*guadarramensis* Warr.) below, but are certainly true *ali*; all 5 are typical *ali* gen. aest. *therapnoides* Oberthür. The only difference from Algerian *ali* is that the spots on the upperside are more whitish, less yellow.

2 ♂♂, 2 ♀♀ Ketama, 29 June, 12 July; 1 ♂ Tetuan, 26 June.

51. *Zygaena trifolii serizati* Oberth.

Zygaena serizati Oberthür, *Étud. Entom.* i, p. 33 (1876) (Collo).

Dr. Romei sent 8 examples; they are not quite typical in so far that some of the five ♂♂ have the red of the hindwings reduced almost as much as in *trifolii nigra* Dz. (I have found that all *serizati* from the higher "Kabylie" are *nigra*, therefore *nigra* is not a simple aberration, but what Staudinger calls "var. et ab.," and therefore it must stand as a subspecies), and one ♀ has the red on hindwings reduced to as little as in normal ♂ *serizati*.

5 ♂♂, 3 ♀♀ Ketama, 29 June; 6, 9, 12, 18 July.

52. *Zygaena trifolii diffusemarginata* subsp. nov.

♂♀. Differs from *t. syracusiae* in the dark border of the hindwings being very much wider.

3 ♂♂, 3 ♀♀ Hauta Kasdir, 15, 19 July (ex coll. Ferrer).

53. *Thaumatopoea pityocampa pityocampa* (Schiff. & Den.).

Phalaena pityocampa Schiffmüller & Denis, *Ankünd. Syst. Verz. Schmettl. Wien*, p. 58 (1775) (Vienna).

In Nov. Zool. xxiv, p. 349, no. 54, I unfortunately referred the Algerian specimens of this species to typical *pityocampa*, whereas they should have been referred to the subspecies *pityocampa orana* Stödr. & Rbl. (*Cat. Lep.* p. 113, no. 875a).

The 2 specimens from Ketama are not *orana* and agree perfectly with examples from Spain and Portugal.

2 ♂♂ Ketama, 1 July.

54. *Notolophus splendida* (Ramb.).

Orgyia splendida Rambur, *Faune Entom. And.* ii, pl. 15, ff. 3, 4, 5, 6, and d. (1842) (Andalusia).

In Nov. Zool. xxiv, pp. 350, 351, I discussed *Notolophus dubia* Tausch, *N. splendida* (Ramb.), and *N. algerica* (Luc.) (= *josephina* Aust.) very carefully, and I then came to the conclusion that Dr. Strand (in Seitz) was wrong in placing all the forms of this group as subspecies of *dubia* Tausch, and I treated them as 3 species with a number of subspecies of *dubia* and *splendida*.

Since then Mr. Collenette has been revising the *Liparidae* and has come to the conclusion that I was wrong and Dr. Strand right, and that all the forms of this group of *Notolophus* are forms of one species *dubia* Tausch. I have been considering this question again in connection with the 7 ♂♂ of the present collection and I cannot but think that the matter is not yet settled. I therefore

quote these 7 examples, which are, undoubtedly, typical *splendida* Ramb., under the binominal appellation of *Notolophus splendida* until I have satisfied myself as to whether all the *dubia-splendida* group are one single very variable species or else 3 less variable species.¹

Some of the 7 examples are less bright yellow than the rest, as they exhibit a wash of olive over the yellow.

7 ♂♂ Ketama, 29 June, 4 July.

55. *Notolophus trigotephras transiens* (Stdgr.).

Orgyia trigotephras var. *transiens* Staudinger, *Cat. Lépid. Pal.*, ed. iii, p. 114, no. 888b (1901) (Mauretania).

The single specimen is very large (forewing 15 mm., expanse 33 mm.) and the blue-grey patches and dark lines are very faint, while the general coloration is very dark chocolate; however, it would be very unwise to base a new subspecies on this single example.

1 ♂ Ketama, 29 June.

56. *Euproctis phaeorrhoea xanthorroea* Oberth.

Euproctis chrysoorrhoea var. *xanthorroea* Oberthür, *Étud. Lépid. Comp.* xii, p. 282 (1916) (Algeria, Tunisia).

The 2 ♂♂ in the collection differ slightly from Algerian examples in having all the abdomen, with the exception of the last segment and the anal tuft, washed with brown; thus tending towards European *phaeorrhoea*.

2 ♂♂ Xauen, 22 July.

57. *Paida murina griseola* subsp. nov.

Differs from *murina murina* and *m. conjuncta* in the ground colour being much more mouse grey, NOT yellowish wood grey.

2 ♂♂, 1 ♀ Xauen, 22 July (Type ♀).

58. *Roeselia togatulalis* (Hübner).

Pyralis togatulalis Hübner, *Europ. Schmett., Pyr.* p. 20, f. 130 (1837) (Europe).

The specimen is very boldly and distinctly marked.

1 ♂ Ketama, 9 July.

59. *Cirphis loreyi* (Dup.).

Noctua loreyi Dupouchel, in Godart, *Lépid. France*, vii, p. 81, pl. 105, f. 7 (1827) (Provence, France).

5 ♂♂, 4 ♀♀ Xauen, 22 July.

60. *Laphygma exigua* (Hübner).

Noctua exigua Hübner, *Europ. Schmett., Noct.* f. 362 (1808) (Europe).

The single example is decidedly small.

1 ♂ Xauen, 22 July.

¹ The similarity of the genitalia of the various forms supports Prof. Strand's opinion.—K. J.

61. **Euxoa segetum** (Schiff. & Den.).

Phalaena segetum Schiffermüller & Denis, *Ankünd. Syst. Verz. Schmett. Wien*, pp. 81, 252, ff. 3 a, b (1775) (Vienna).

The single ♀ with almost totally black forewings belongs to the ab. *corticus* Haw.

1 ♀ Xauen, 22 July.

62. **Exoa margaritosa** (Haw.).

Noctua margaritosa Haworth, *Lepid. Brit.* p. 218 (1809).

The 4 ♂♂ vary from deep maroon brown to sooty brown varied on forewing and thorax with yellowish olive.

4 ♂♂ Xauen, 22 July.

63. **Agrotis c-nigrum** (Linn.).

Phalaena c-nigrum Linnaeus, *Syst. Nat.* ed. x, p. 516, no. 110 (1758) (Sweden).

1 ♂ Xauen, 22 July.

64. **Miselia dysodea dysodea** (Schiff. & Den.).

Noctua dysodea Schiffermüller & Denis, *Ankünd. Syst. Verz. Schmett. Wien*, p. 72 (1775) (Vienna).

I cannot understand why the late William Warren in Seitz uses Vieweg's name which was published thirteen years later than Schiffermüller's.

1 ♂ Xauen, 22 July.

65. **Chloridea peltigera** (Schiff. & Den.).

Phalaena peltigera Schiffermüller & Denis, *l.c.* p. 89 (1775) (Vienna).

The two examples are very sharply marked.

1 ♂, 1 ♀ Xauen, 22 July.

66. **Acoutia luctuosa** (Schiff. & Den.).

Phalaena luctuosa Schiffermüller & Denis, *l.c.* p. 90 (1775) (Vienna).

1 ♂ Xauen, 22 July.

67. **Eublemma parva** (Hübner).

Noctua parva Hübner, *Samml. Europ. Schmett. Noct.* f. 356 (1808) (Europe).

The 5 examples show unusually little individual differences.

1 ♂, 3 ♀♀ Xauen, 22 July; 1 ♂ Ketama, 6 Aug.

68. **Eublemma ostrina** (Hübner).

Noctua ostrina Hübner, *Samml. Europ. Schmett. Noct.* ff. 309, 648 (1808) (Europe).

All 3 examples are typical gen. aest. *aestivalis*.

1 ♂, 2 ♀♀ Xauen, 22 July.

69. *Eublemma suava blandula* (Ramb.).

Noctua blandula Rambur, *Cat. Lépid. And.* pl. x, f. 2 (1858) (Andalusia).

I have only very few typical *blandula* for comparison, so although the 4 examples differ strongly in colour from Rambur's figure, I do not yet venture to separate the Moroccan examples from the Spanish ones. These 4 specimens are very strongly suffused with purple (for further notes see *Nov. Zool.* xxvii, p. 85, 1920).

2 ♂♂, 2 ♀♀ Ketama, 4, 6 July.

70. *Synthymia fixa australis* (Oberth.).

Metoptnia monogramma australis Oberthür, *Étud. Lépid. Comp.* xvi, p. 199, pl. xdvii, f. 4137 (1919) (Géryville).

The single example agrees well with Oberthür's figure.

1 ♀ Xauen, 22 July.

71. *Phytometra gamma* (Linn.).

Phalaena gamma Linnaeus, *Syst. Nat.* ed. x, p. 513, no. 91 (1758) (Sweden).

The 2 examples are quite typical.

2 ♂♂ Xauen, 22 July.

72. *Autophila ligaminosa* (Eversm.).

Spintherops ligaminosa Eversmann, *Bull. Soc. Imp. Nat. Mosc.* 1851, p. 630 (Georgia and Armenia).

1 ♂, 2 ♀♀ Ketama, 4, 14, 27 July.

73. *Catocala (Ephesia) nymphaea* (Esp.).

Noctua nymphaea Esper, *Schmett.* iv, pt. 1, p. 158, no. 52, pl. cv, f. 4 (1787) (Lyons).

1 ♀ Ketama, 29 June.

74. *Catocala (Ephesia) conversa* (Esp.).

Noctua conversa Esper, *Schmett.* iv, pt. 1, pl. cvB, ff. 1, 2, 3 (1787) (Europe).

Three specimens, two of which have a slight olive tint to the yellow on the hindwings.

1 ♀ Xauen, 22 July ; 1 ♂ Cuernos de Xauen, 21 July ; 1 ♂ Taghsut, 3 Aug.

75. *Parallelia algira* (Linn.).

Phalaena algira Linnaeus, *Syst. Nat.* ed. xii, p. 836, no. 98 (1767) (Algeria).

1 ♀ Ketama, 14 July ; 3 ♂♂ Xauen, 22 July.

76. *Chlorissa pulmentaria* (Guen.).

Nemoria pulmentaria Guenée, in Boisduval & Guenée, *Hist. Nat. Ins. Spec. Gén. Lépid. Uran. et Phal.* ix (vol. i), p. 349, no. 541 (1857) (S. France, Dalmatia, Italy).

1 ♀ Xauen, 22 July.

77. *Rhodostrophia vibicaria strigata* Stdgr.

Rhodostrophia vibicaria var. (et ab.?) *strigata* Staudinger, *Cat. Lep.* ed. ii, p. 154, no. 2227a (1871) (Andalusia, N. Persia).

The single example is large and agrees with Sicilian specimens. The figure in Seitz is too small.

1 ♂ Ketama, 1 July.

78. *Scopula marginipunctata* (Goeze).

Phalaena Geometra marginipunctata Goeze, *Entom. Beytr.* iii, pt. iii, no. 85 (1781) (Europe).

Of the 3 examples Mr. Prout considers the 2 Xauen specimens are his form *argillacea* (the Mauretanian race) and the Ketama ♀ somewhat intermediate; but I think *argillacea* can hardly be treated as more than an ab. loc.

1 ♂, 1 ♀ Xauen, 22 July; 1 ♀ Ketama, 9 July.

79. *Sterrrha lambessata* (Oberth.).

Acidalia lambessata Oberthür, *Bull. Soc. Ent. France*, 1887, p. lxxvii, no. 8 (Lambessa, Algeria).

One example, quite typical.

1 ♀ Ketama, 1 July.

80. *Sterrrha allardiata* (Mab.).

Acidalia allardiata Mabille, *Ann. Soc. Ent. France* (4), ix, p. 59, pl. 2, f. 7 (1869) (Lambessa, Biskra)

Differs from Mabille's figure in the base of forewings not being white and in the ante- and postmedian bands being more widely separated, as in *sericeata* Hübn.; but more Moroccan material is required before we can separate the Moroccan and Algerian forms.

1 ♀ Ketama, 1 July.

81. *Sterrrha lutulentaria terminolineata* subsp. nov.

Differs from *lutulentaria lutulentaria* above in being paler yellow, with greyish, less yellowish, markings and with terminal dashes between the nervures, thus approaching *fuscovenosa* Goeze.

1 ♀ Ketama, 9 July.

82. *Sterrrha ostrinaria* (Hüb.).

Phalaena ostrinaria Hübner, *Samml. Europ. Schmett. Geomet.* f. 430 (1805) (Europe).

1 ♀ Ketama, 9 July.

83. *Sterrrha fathmaria* (Oberth.).

Eupithecia fathmaria Oberthür, *Étud. Entom.* i, p. 63 (1876) (Oued-Hounet, Prov. Oran).

This is the first record of this very distinct species from Morocco, though it is well known from all over Western Algeria.

1 ♂, 8 ♀♀ Ketama, 29 June; 1, 4 July.

84. *Rhometra sacraria* (Linn.).

Phalaena (Geometra) sacraria Linnaeus, *Syst. Nat.*, ed. xii, p. 863, no. 220 (1766) ("Habitat in Barbaria").

All 3 belong to ab. *labda* Cram. One ♀ is strongly marked, the oblique dark line reaching the hindmargin as in the ♂. A small well-defined cell spot is also developed in this ♀.

1 ♂, 2 ♀♀ Xauen, 22 July.

85. *Coenotephria kalischata* (Stdgr.).

Cidaria kalischata Staudinger, *Berl. Entom. Zeitschr.*, xiv, p. 127, no. 25 (1870) (Malaga, Oran).

The single specimen, though a ♀, shows no sign of the rosy suffusion given by the author for that sex, but has the ground more olivaceous grey. This is new for Morocco.

1 ♀ Ketama, 1 July.

86. *Euphyia bilineata numidica* Rothschild.

Euphyia bilineata numidica Rothschild, *Ann. Mag. Nat. Hist.* (9), xvi, p. 206, no. 37 (1925) (Algeria, Cyrenaica).

The ♂♂ show the usual wide range of variation; 1 ♂ has the median area distally very dark, this is from Taghsut; while one from Ketama is extremely vivid yellow with all transverse markings very yellow.

3 ♂♂ Taghsut, 3 July; 2 ♂♂, 5 ♀♀ Ketama, 1, 9, 12 July.

87. *Anaitis efformata* Guen.

Anaitis efformata Guenée, *Hist. Nat. Ins. Spec. Gén. Lépid. Phalèn.* ii, p. 500, no. 1730 (1858) (Syria).

This species up to the year 1923 had been treated by almost every lepidopterist as a synonym of *A. plagiata* (Linn.), and it was Dr. Jordan who first drew attention to the SPECIFIC differences. *A. efformata* had, in the third edition of Staudinger and Rebel's *Catalogue*, been placed with a doubt mark (?) under his var. et ab. *pallidata* described in the *Horae*, vii, p. 171 (1870). As there is no CERTAIN difference in colour, pattern, and size between *plagiata* and *efformata*, and the striking differences are confined to the secondary sexual organs of both ♂ and ♀, it is hardly surprising that the two species were considered as one for so long. For further particulars see Jordan, *Nov. Zool.* xxx, pp. 243-246 (1923).

1 ♀ Xauen, 22 July; 1 ♂, 1 ♀ Ketama, 29 June, 9 July.

88. *Gymnoscelis pumilata* (Hübner).

Phalaena (Geometra) pumilata Hübner, *Samml. Europ. Schmett., Geom.* fig. 388 (1805) (Europe).

A curious error has apparently crept into the plate (No. 75) of Hübner's *Sammlung*, displaying the insects numbered 386 to 390 of the *Geometrae*. The species of "Pugmoth" dealt with here is depicted by fig. 388 and *aversaria* Hübn. = *aversata* Linn. by fig. 389; and these figures have been quoted as applying to those species without comment. But on the same plate (75) in the explanation at the foot of the plate the numbers are reversed, *aversaria* being numbered 388 and *pumilata* 389.

Jacob Hübner, in his *Systematisch-alphabetisches Verzeichniss zur Sammlung europäischer Schmetterlinge*, p. 48, 1892, quotes *pumilata* under 389, as does also Herrich Schäffer in his *Syst. Bearb. Schmett. Europ.* 3, 141, under No. 72 (1847), and Dupouchel, in Godart, *Hist. Nat. Lépid. France, Suppl.* iv, p. 105, no. ccciii, pl. 59, f. 3 (1842). None of these three authors explain why they have quoted 389 instead of 388, and most other authors have used No. 388 without scruple.

The only reason I can imagine for so many authors (including Staudinger) quoting 388 without any comment is that 388 of the explanation = 389 figure on plate called in explanation *averseria* is the so well-known *aversata* Liun. that every author thought his readers would see that the explanation was the erroneous factor and the figure with the number 388 could be the only possible *pumilata*.

2 ♂♂, 4 ♀♀ Xauen, 22 July; 2 ♀♀ Ketama, 1, 4 July.

89. *Rhoptria asperaria* (Hübner).

Phalaena (Geometra) asperaria Hübner, *Samml. Europ. Schmett.* fig. 484 (1805) (Europe).

Both examples belong to the typical banded form hardly known from N.W. Africa, where it is almost entirely replaced by the faintly marked, nearly unicolorous form *pityata* Ramb.

1 ♂ Ketama, 4 July; 1 ♀ Xauen, 22 July.

90. *Mannia oranaria* (Stdgr.).

Tephronia oranaria Staudinger, *Iris*, 5, p. 179 (1892) (Sebdou, Oranais).

This species is new for Morocco.

1 ♂ Ketama, 9 July; 1 ♀ Xauen, 22 July.
